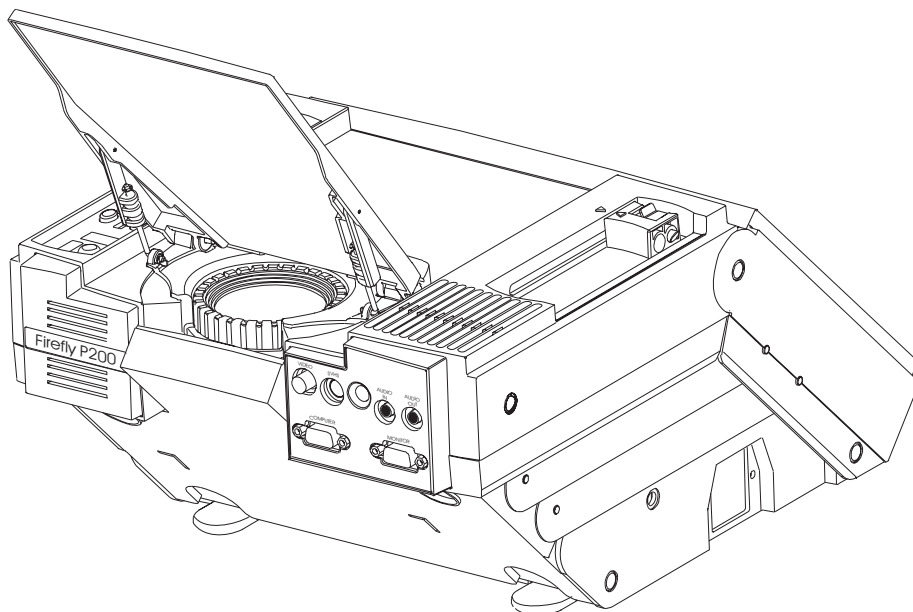
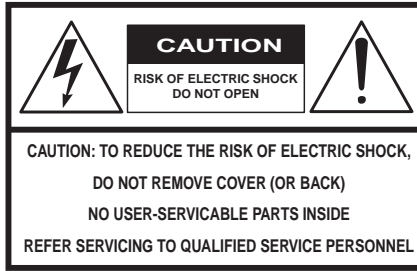


Telex[®]

User's Manual



Firefly[™] P200/P250 LCD Notebook Projector



The lightning flash with arrowhead symbol is displayed on the product to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may constitute a risk of electric shock.



The exclamation point symbol is displayed on the product to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature that accompanies the product.



The heat warning symbol is displayed on the product to alert the user to the presence of a hot surface that may constitute a risk of burns.

IMPORTANT SAFETY INSTRUCTIONS

1. Read Instructions - All the safety and operating instructions should be read before the product is operated.
2. Retain Instructions - The safety and operating instructions should be retained for future reference.
3. Heed Warnings - All warnings on the product and in the operating instructions should be adhered to.
4. Follow Instructions - All operating and use instructions should be followed.
5. Cleaning - Unplug the product from the wall outlet before cleaning any exterior surface. Follow the cleaning instructions in this manual.
6. Water and Moisture - Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
7. Ventilation - Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to prevent it from overheating. These slots and openings must not be blocked or covered in any manner.

8. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at wall outlets, convenience receptacles, and the point where they exit from the product.
9. Lightning - For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.
10. Overloading - Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
11. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled onto the product as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock.
12. Servicing - Do not attempt to service the product beyond that described in the operating instructions as opening or removing covers may expose you to dangerous voltage. All other servicing should be referred to qualified service personnel.
13. Damage Requiring Service - Unplug this product from the wall outlet and refer servicing to qualified service personnel when:
 - a. The power supply cord or the plug has been damaged.
 - b. Objects have fallen, or liquid has been spilled into the product.
 - c. The product has been exposed to rain or water.
 - d. The product does not appear to operate normally or exhibits a marked change in performance.
 - e. The product has been dropped, or the enclosure damaged.
14. Replacement Parts - When replacement parts are required, be sure the technician has used replacement parts that have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.

Warranty

Telex warrants that the Firefly™ P200/P250 will provide a usable active pixel ratio of at least 99.995%. This means that out of 1.44 million pixels on the Firefly™ P250 (921,600 pixels on the P200), less than 50 pixels will be inactive.

Inactive pixels may appear illuminated on the display, however, they will not affect picture quality or the life expectancy of the unit. If you have any questions on this matter, please feel free to contact Telex Communications, Inc.

FCC Statement

This equipment generates, uses, and can radiate radio frequency energy that may cause interference to radio communications if not installed and used in accordance with this manual. The equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J, Part 15 of FCC Rules which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference which the user (at their own expense) will be required to correct.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Firefly™ is a trademark of Telex Communications, Inc.,
Minneapolis, Minnesota 55420

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GENERAL FEATURES

The Firefly™ P200/P250 is a full-color compact LCD projection system that is used to display a computerized multi-media presentation. The built-in amplifier/speakers lets you connect to a wireless microphone, portable CD player, or to the auxiliary output of a stereo system. The P200/P250 also allows you to connect to the output of a VCR or LaserDisc player.

The P200/P250 is equipped with a monitor interface connector. This allows you to simultaneously view your computer video on both the small and large screens. Figure 1 shows the P200/P250 in use to project computer-generated images onto a large screen.

Figure 1. P200/P250 In Operation



The Firefly™ P200/P250 can be connected to any IBM or IBM compatible computer equipped with a VGA/SVGA video output. The P200/P250 can also be connected to any Apple Macintosh computer that is equipped with a standard Macintosh video output.

The Firefly™ P200/P250 uses advanced thin-film-transistor liquid crystal display (TFT LCD) technology and is capable of displaying up to 16,194,277 colors. The fast response time of the P200/P250's TFT LCD provides you with the ability to display sharp, clear, fast-moving images.

The P200 liquid crystal display is a matrix of 921,600 pixels arranged in 480 rows x 640 columns x 3 colors, while the P250 liquid crystal display is a matrix of 1.44 million pixels arranged in 600 rows x 800 columns x 3 colors. Each pixel is a single thin-film-transistor that actively controls the brightness of the light that passes through the pixel.

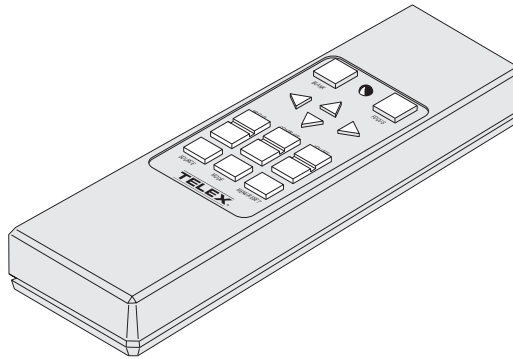
To protect the P200/P250 from excessive heat, it is equipped with fans that are turned on whenever the LCD notebook projector is turned on.

The keypanel and on-screen controls allow you to change the video source, color, tint, focus, position, volume, tone, etc. of the projected color image and sound.

ACCESSORIES

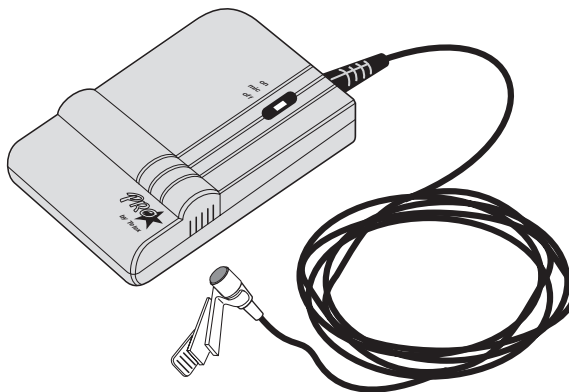
The accessories shown in Figures 2 and 3 are available for use with the Firefly™ P200/P250 LCD notebook projector:

Figure 2. RC-8 Remote Control
Catalog 47436-030



The RC-8 is specifically designed for use with the Firefly™ P200/P250. It allows remote control of all the P200/P250 keypanel and on-screen functions. (The RC-8 comes with the Firefly™ P200/P250.)

Figure 3. B-10 Lapel Microphone with Transmitter
Catalog 70889-xxx



The B-10 features a permanently attached omni-directional lapel microphone. The unique microphone cable doubles as an efficient antenna, and the transmitter can be clipped to your belt or placed in your pocket. The B-10 can be configured for use with either the PAS-1 or ENG-1 Telex receiver.

UNPACKING THE P200/P250

Unpack the Firefly™ P200/P250 LCD notebook projector and check the package contents. Refer to Figure 4 and the following list for items that are included in the P200/P250:

- P200/P250 LCD notebook projector, with appropriate labels
- User's manual
- Quick reference guide
- Adapter Redemption Card
- VGA/SVGA video cable
- Macintosh adapters for P200 (550093-000 and 550093-001)
- Macintosh adapters for P250 (550093-002 and 550093-003)
- Audio cable (1/8" stereo phone to 1/8" stereo phone)
- Audio cable (dual RCA to 1/8" stereo phone adapter)
- Composite video (RCA to RCA)
- RC-8 Remote control
- Power cord (110V units only)
- Registration card
- Soft-sided case
- Warranty card

Contact your dealer if anything is missing or damaged.

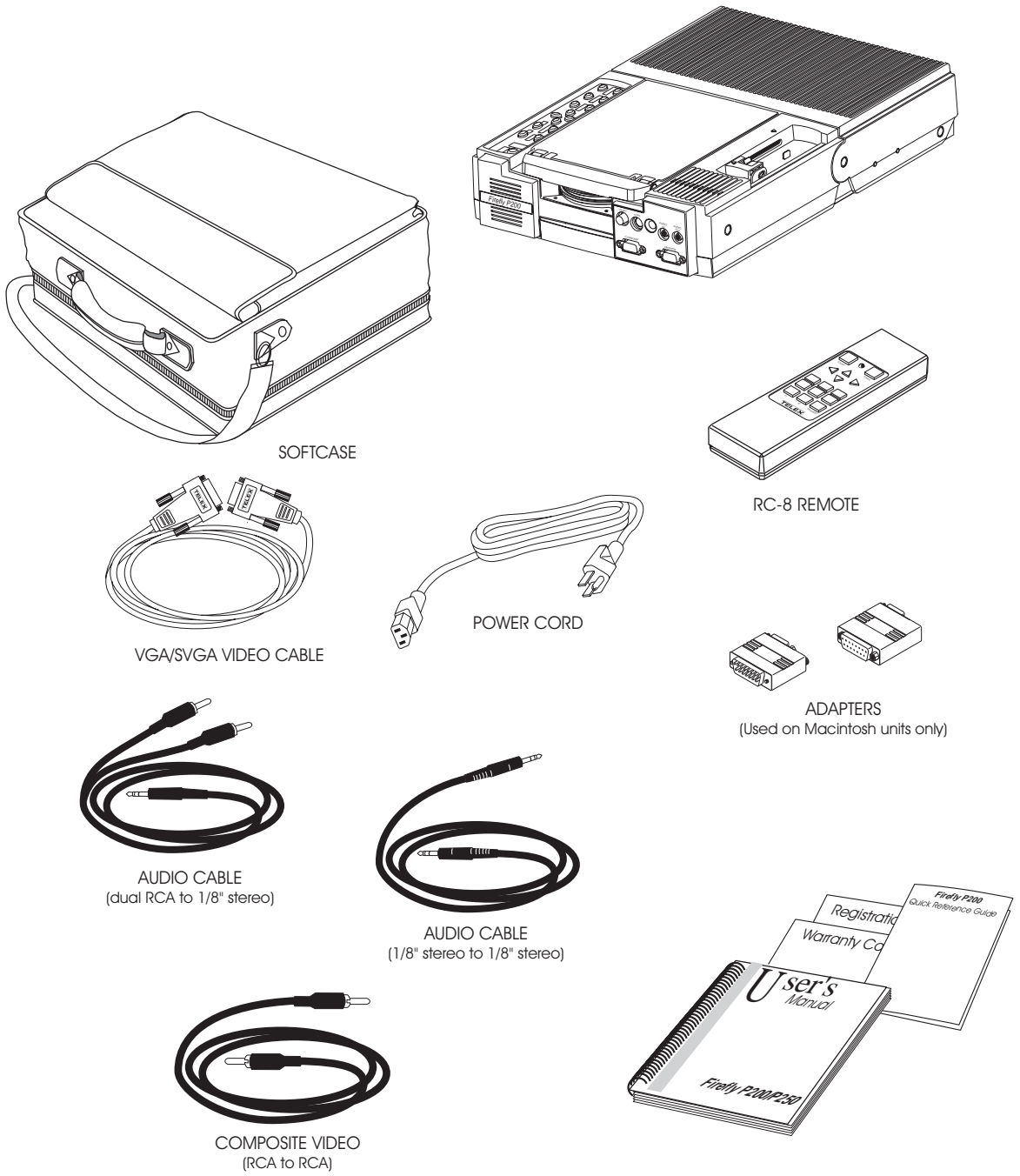


NOTE: The 550093-002 and 550093-003 adapters are for use with Macintosh multisync monitors. (Telex part numbers 550093-000 and 550093-001 are for 640 x 480 Macintosh mode, while Telex part numbers 550093-003 and 550093-004 are for 832 x 624 Macintosh mode.)



NOTE: If the adapters that came with your P200/P250 do not meet your Macintosh computer requirements, complete and return the Adapter Redemption Card.

Figure 4. P200/P250 Package Contents



P200/P250 SETUP

This section is a detailed description of the setup for your P200/P250.

Positioning the Firefly™ P200/P250 On the Desktop

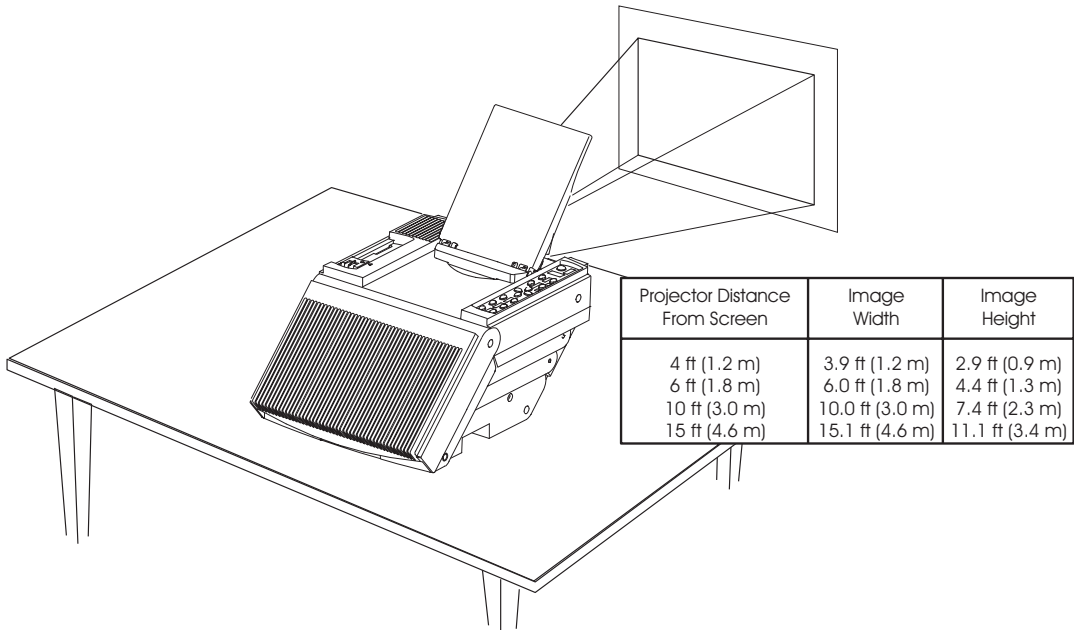
1. Place the P200/P250 on a table or desktop as shown in Figure 5.



NOTE: Ensure that the P200/P250 vents are not blocked. The P200/P250 takes in cool air at the side of the projector. Hot air is exhausted at the rear of the P200/P250.

2. To determine the distance between projector and screen, refer to Figure 5 and select the desired screen image size.

Figure 5. Distance vs Image Size



Connecting the P200/P250

The P200/P250 must be connected to a video source, and to an AC wall outlet. The P200/P250 can be connected to a computer monitor, audio source, additional (composite or S-VHS) video source and to an external amplified stereo speaker system.

The following describes the steps needed to connect the P200/P250.

1. Turn off all equipment.

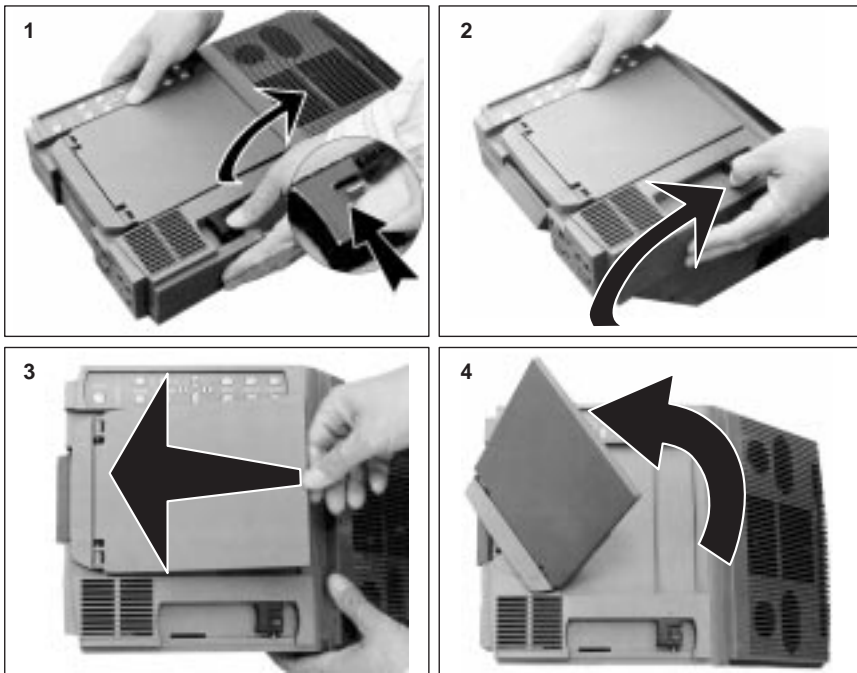
2. Press and release the locking mechanism, then lift the P200/P250 to its raised position as shown in Figure 6.
3. Plug the Firefly™ P200/P250 into an AC wall outlet (the *POWER* button will glow).
4. Audio input can be amplified by the P200/P250 and heard over the built-in speakers. Connect a stereo or mono audio source, such as the auxiliary output of an amplifier, a wireless microphone system, CD player, tape player, VCR or LaserDisc to the *AUDIO IN* jack (use one of the two audio cables shown in Figure 4).
5. If desired, connect an external amplified, mono or stereo speaker system to the *AUDIO OUT* jack on the P200/P250.



NOTE: When a cable is plugged into the *AUDIO OUT* jack, the built-in speakers are disabled.

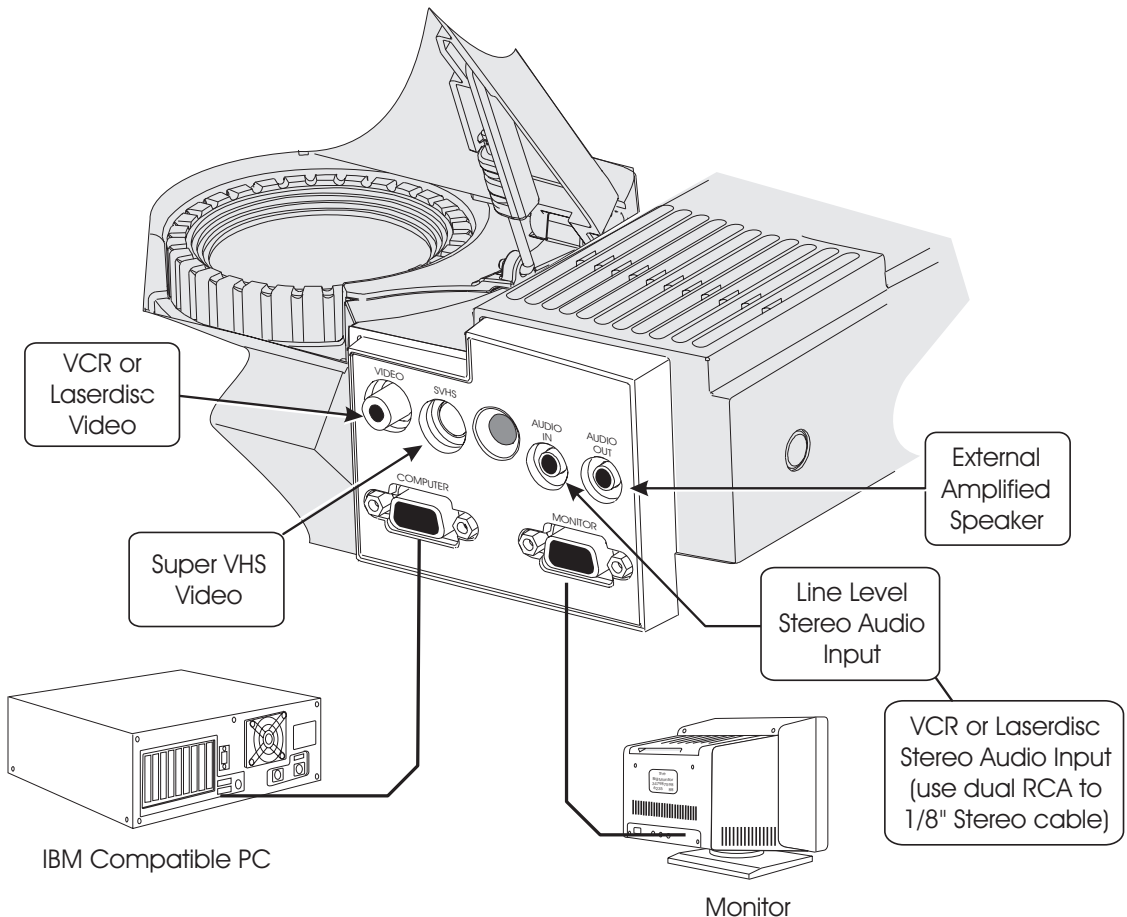
6. A video source such as a VCR or LaserDisc player can be connected to the *VIDEO* jack on the P200/P250 as shown in Figures 7 and 8, using the composite video cable shown in Figure 4. (If your video system has S-VHS capabilities, use the cable supplied with your video system to connect to the *SVHS* jack on the P200/P250.)

Figure 6. Raising the Firefly™ P200/P250



7. If you are using an IBM VGA/SVGA computer, the connections are shown in Figure 7:
- Unplug the monitor cable from the computer.
 - Plug one end of the supplied VGA/SVGA cable into the video port of the computer.
 - Plug the other end of the VGA/SVGA cable into the *COMPUTER* jack on the Firefly™ P200/P250.
 - To use your computer monitor along with your P200/P250, plug the monitor cable into the *MONITOR* jack on the Firefly™ P200/P250.

Figure 7. P200/P250 to IBM Connections

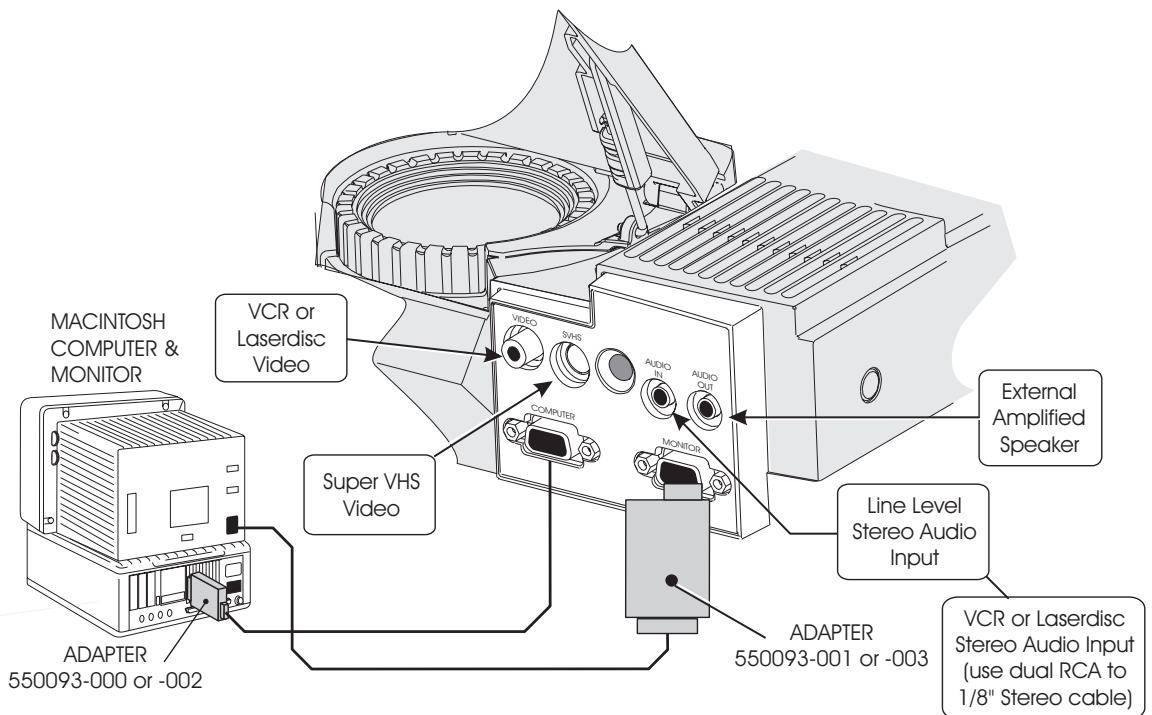


- 8. If you are using a Macintosh computer, the connections are shown in Figure 8:**
- a. Unplug the monitor cable from the computer.
 - b. Plug the adapter labeled either "550093-0" or "550093-2" into the monitor port of the computer.
 - c. Plug one end of the supplied VGA/SVGA cable into the adapter on the computer.
 - d. Plug the other end of the VGA/SVGA cable into the *COMPUTER* jack on the Firefly™ P200/P250.
 - e. To use your computer monitor along with your Firefly™, select the adapter labeled either "550093-1" or "550093-3." Plug the adapter into the *MONITOR* jack on the Firefly™ P200/P250; plug the computer monitor cable into the adapter.



NOTE: Use the "550093-2" and "550093-3" adapters with the 12-inch Macintosh monitor, or the 15-inch Multisync monitor.

Figure 8. P200/P250 to Macintosh Connections

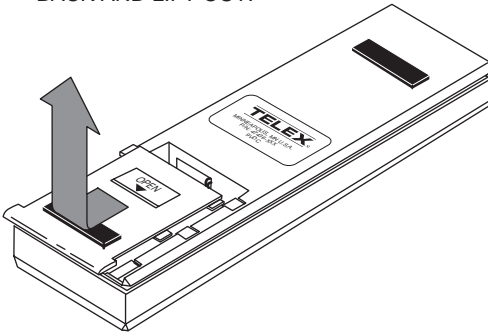


Remote Control Battery

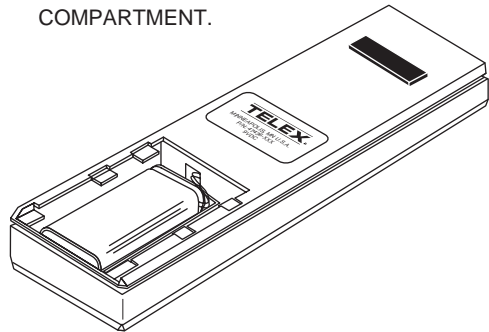
The remote control requires one 9V alkaline battery installed as shown in Figure 9.

Figure 9. Remote Control Battery Installation

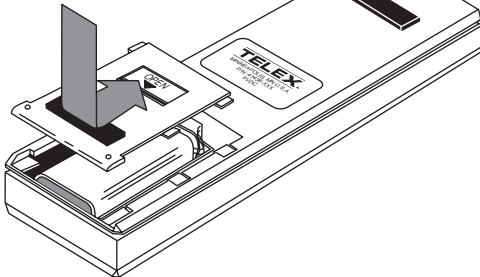
1. SLIDE THE BATTERY COVER BACK AND LIFT OUT.



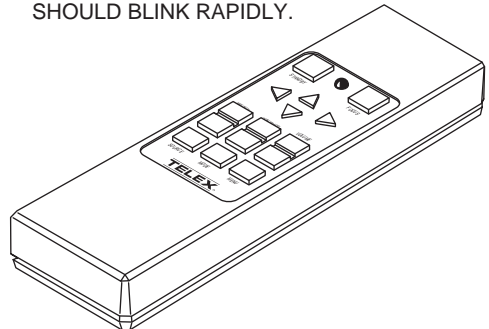
2. PLUG IN THE BATTERY AND POSITION IT IN THE BATTERY COMPARTMENT.



3. ALIGN THE TABS ON THE BATTERY COVER WITH THE SLOTS IN THE BACK CASE AND REPLACE THE COVER.



4. CHECK THE OPERATION BY PRESSING ANY KEY. THE LED INDICATOR SHOULD BLINK RAPIDLY.



A new battery should be installed in the remote control unit under the following circumstances:

- New remote control unit is received from the factory.
- LED on the remote control no longer lights when keys are pressed, indicating a “dead” battery
- Operating distance between the remote control and the P200/P250 becomes too short for your purposes, indicating a “weak” battery

Continue with the Operation section of this manual for instructions on the use of your Firefly™ P200/P250 LCD Notebook Computer Projector.

OPERATION

After you have connected the Firefly™ P200/P250 as described in the P200/P250 Setup section of this manual, you are ready to begin using your P200/P250 LCD notebook projector.

Basic Operation

1. Lift and rotate the mirror as shown in Figure 6.
2. Press *POWER* to turn on the P200/P250 LCD notebook projector. The keypanel will light up and the projector lamp will turn on; initially the screen will be blue. After initialization, the Telex logo will appear.



WARNING! To prevent burns when the P200/P250 is operating, avoid touching the lamp access door and the surrounding area.

3. Turn on the attached computer. The Telex logo will disappear and the computer image will appear.



CAUTION! The cooling fans protect the Firefly™ P200/P250 from heat generated by the projector lamp. Always make sure that the air intake and exhaust are not blocked.

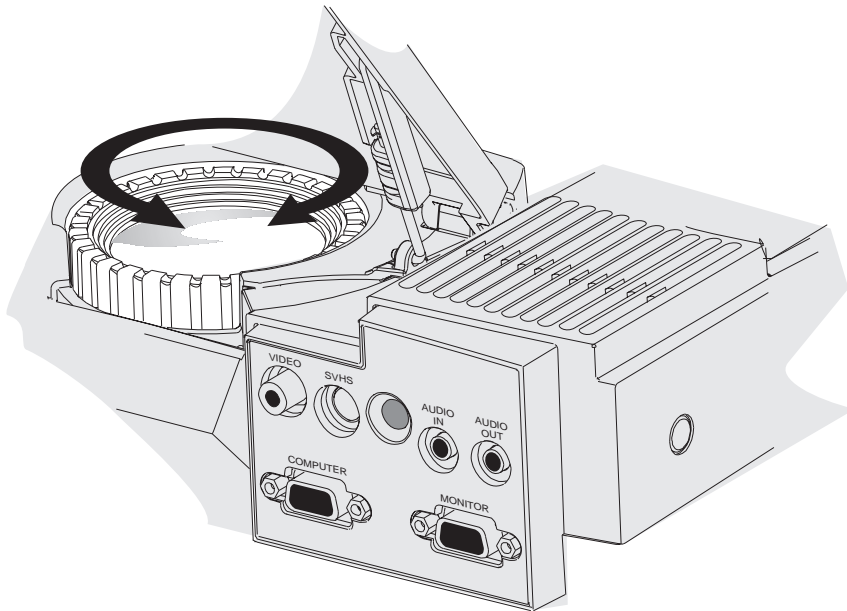
4. Adjust the room lighting for optimum screen viewing. (The projector lamp is automatically turned on when the P200/P250 is turned on.)
5. Adjust the mirror angle for best screen image. (You may press the *POWER* button to turn off the projector and lamp until your presentation begins.)
6. Adjust the screen focus by rotating the lens (Figure 10).



NOTE: The keypanel and on-screen control settings will be the same as they were when the P200/P250 was last used, if ten seconds were allowed to elapse before the P200/P250 was disconnected from the AC wall outlet.

7. To improve the image phase adjustment, display a colorful image on the computer screen and select the on-screen **FOCUS** control. (It is easier to adjust the Firefly™ P200/P250 with a colorful image.)
8. Turn on your audio source (CD player, wireless microphone, amplifier auxiliary audio output, etc.).

Figure 10. P200/P250 Screen Focus



9. Press *VOLUME* to adjust the volume of the P200/P250 built-in speakers.



NOTE: If you have an external powered speaker system plugged into the *AUDIO OUT* jack, turn it on and adjust the volume of that external system. (The level at the *AUDIO OUT* jack is controlled by *VOLUME*.)

10. Turn on and play the connected VCR, LaserDisc player, etc.
11. Press *SOURCE* on the P200/P250 keypanel to select one of the video inputs.
12. To further enhance or change the image on the Firefly™ P200/P250, refer to the Keypanel and Menu Mode On-Screen Control sections of this manual.



NOTE: Ten seconds after you make a change, the image enhancements that you have made will be saved. These saved enhancements will be used as the default settings the next time that you activate your P200/P250.

13. When you are not projecting an image, press *POWER* to turn off the projector and lamp.

14. After the Firefly™ P200/P250 has cooled and the fans have stopped, you may unplug the P200/P250 from the AC wall outlet.



NOTE: To use your computer and monitor without disconnecting them from the P200/P250, the P200/P250 must be plugged into an AC wall outlet. The *MONITOR* jack on the Firefly™ P200/P250 requires power to operate the computer monitor.

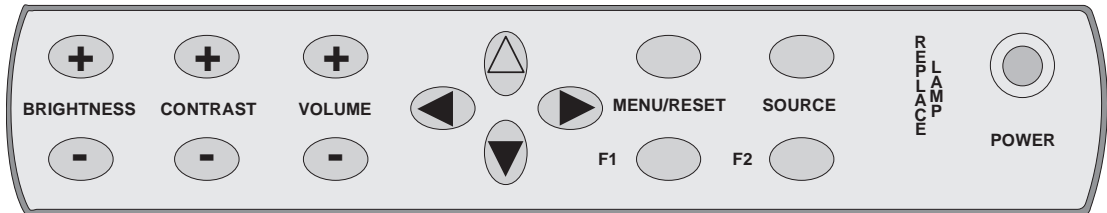


NOTE: The projector does **not** need to be turned on to use the *MONITOR* jack.

CONTROLS

The P200/P250 keypanel and Menu Mode On-Screen controls allow you to customize the projected image and enhance the appearance of your presentation. The function of each keypanel and on-screen control is described below and the keypanel is shown in Figure 11.

Figure 11. Firefly™ P200/P250 Keypanel



Keypanel Controls



NOTE: All controls have on-screen graphics to indicate their relative value or selection setting.

BRIGHTNESS

Press the upper (+) button of the *BRIGHTNESS* control to increase the overall image brightness. Press the lower (-) button of the *BRIGHTNESS* control to decrease the overall image brightness. When either adjustment limit is reached, the on-screen indicator will stop moving.

CONTRAST

Press the upper (+) button of the *CONTRAST* control to make the color image more vivid. Press the lower (-) button of the *CONTRAST* control to provide greater definition to the color image in the subtle shading areas. When either adjustment limit is reached, the on-screen indicator will stop moving.

VOLUME

Press the upper (+) button of the *VOLUME* control to increase the volume of the built-in speakers, or increase the level at the *AUDIO OUT* jack. Press the lower (-) button of the *VOLUME* control to decrease the volume of the built-in speakers, or decrease the level at the *AUDIO OUT* jack. When either adjustment limit is reached, the currently active on-screen indicator will stop moving.

Alignment

Press ◀ (left), ▶ (right), △ (up), or ▼ (down) to move the image left, right, up, or down. (There is no adjustment limit for the alignment function; the image will continue moving and wrap around to the opposite edge of the display.)



NOTE: The Alignment controls are functional only when the P200/P250 is not in “menu” mode.

MENU

This key controls the display of the on-screen controls “menu.” If an on-screen controls “menu” item is displayed, pressing this key will make the display disappear (on-screen displays normally disappear after five seconds). To enter “menu” mode and access the on-screen controls, press and release *MENU/RESET*, then press either the up or down arrow key to “step” through the “menu” until the desired Menu Mode On-Screen Control is displayed. When the P200/P250 is in on-screen “menu” mode, only the Menu Mode On-Screen Controls are functional.

RESET

To reset the Firefly™ P200/P250 image to the original factory settings, press and hold *MENU/RESET* until the on-screen display indicates **READY TO RESET** (approximately five seconds). When the key is released the P200/P250 will reset, clearing all image enhancements that you have made, restoring the factory settings as the default settings. (If *MENU/RESET* is released before **READY TO RESET** is displayed, the factory settings will not be restored.)

SOURCE

Press *SOURCE* to select video input from *COMPUTER*, *VIDEO*, *SVHS* jacks. If only one video source is “live,” the screen will go blank for a moment, then return control to the “live” video source.

F1, F2

The *F1* and *F2* keys can be programmed as shortcuts to any Menu Mode On-Screen control that you feel you regularly need to use without going through the on-screen “menu” to access. To begin programming the *F1* or *F2* key, first access the desired Menu Mode On-Screen Control, then press *F1* or *F2* and the *F1* on-screen graphic will appear. Press *F1* or *F2* a second time to program the key for the selected Menu Mode On-Screen Control. The *F1* or *F2* key will now access the selected Menu Mode On-Screen Control. If you **do not** press *F1* or *F2* a second time within five seconds, the *F1* and *F2* programs will remain unchanged.

REPLACE LAMP

The *REPLACE LAMP* indicator lights when the lamp hour value reaches zero. Use the **LAMP HOURS** On-Screen Control to reset the lamp hour value and extinguish the *REPLACE LAMP* indicator.

POWER

Press *POWER* to turn off the projector and lamp. Press *POWER* again to turn on the projector and lamp.

Menu Mode On-Screen Controls

- INVERSE** To access the **INVERSE** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **INVERSE** is displayed. Press either the right or left arrow key to switch between a positive and negative image. An on-screen graphic will indicate the **INVERSE** setting.
- WIDTH** To access the **WIDTH** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **WIDTH** is displayed. Press the right arrow key to expand the width of the image. Press the left arrow key to contract the width of the image. An on-screen graphic will indicate the relative value of the **WIDTH** setting. **WIDTH** may affect the **FOCUS** control, refer to the Troubleshooting Guide.
- FOCUS** To access **FOCUS** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **FOCUS** is displayed. Press either the right or left arrow key to select between eight possible image phase adjustment settings. An on-screen graphic will indicate the **FOCUS** setting. **FOCUS** can be affected by the **WIDTH** control, refer to the Troubleshooting Guide.
- MIRROR** To access the **MIRROR** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **MIRROR** is displayed. Press either the right or left arrow key to switch between the standard or mirror (reverse) image. An on-screen graphic will indicate the **MIRROR** setting.
- PALETTE** To access the **PALETTE** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **PALETTE** is displayed. Press either the right or left arrow key to switch between one of two color modes: 8-color or 16,194,277-color. An on-screen graphic will indicate the **PALETTE** setting.
- TINT** To access the **TINT** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **TINT** is displayed. Press the right arrow key to increase the red in the color image. Press the left arrow key to increase the green in the color image. An on-screen graphic will indicate the relative value of the **TINT** setting.
- TONE** To access the **TONE** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **TONE** is displayed. Press the right arrow key to increase the high tones in the speaker output. Press the left arrow key to decrease the high tones in the speaker output. An on-screen graphic will indicate the relative value of the **TONE** setting.

LAMP HOURS

To access the **LAMP HOURS** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **LAMP HOURS** is displayed. An on-screen graphic will indicate the relative **LAMP HOURS** value. The **LAMP HOURS** value is based upon an expected average lamp life. As the P200/P250 is used, the lamp hour value is decremented toward 0. When the lamp hour value reaches 0, the *REPLACE LAMP* indicator will light. Press either the right or left arrow key to reset the **LAMP HOURS** value to its maximum, and extinguish the *REPLACE LAMP* indicator.

Language

To access the language function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **ENGLISH, FRENCH, GERMAN** or **SPANISH** is displayed. Press either the right or left arrow key to “step” through the four languages. The language selected will be displayed on-screen.

TV COMPRESS

To access the **TV COMPRESS** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **TV COMPRESS** is displayed. Press the right or left arrow key to switch between the standard or compressed screen image. An on-screen graphic will indicate the **TV COMPRESS** setting. This control can only be adjusted when viewing a PAL or SECAM TV video image on the P200 (this function is not used with the P250).

TV SHARPNESS

To access the **TV SHARPNESS** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **TV SHARPNESS** is displayed. Press the right or left arrow key to select between the eight image sharpness settings. An on-screen graphic will indicate the **TV SHARPNESS** setting. This control can only be adjusted when viewing a TV video image.

TV COLOR

To access the **TV COLOR** function, press and release *MENU*, then press either the up or down arrow key to “step” through the “menu” until **TV COLOR** is displayed. Press the right arrow key to increase the amount of color in the image. Press the left arrow key to decrease the amount of color in the image. An on-screen graphic will indicate the relative value of the **TV COLOR** setting. This control can only be adjusted when viewing a TV video image.

Illuminated Indicators

<i>POWER</i>	The <i>POWER</i> button glows red when the P200/P250 is plugged into an AC wall outlet and is ready to be turned on.
Keypanel	When the keypanel is lit, indicates that the P200/P250 is in operation; the projector lamp should also be on.
<i>REPLACE LAMP</i>	When lit, <i>REPLACE LAMP</i> indicates that the LAMP HOURS value is zero. Refer to the LAMP HOURS Menu Mode On-Screen control and the Lamp Replacement section of this manual.

Remote Control

The RC-8 remote control can be used to remotely change all of the keypanel and on-screen control functions. When a remote control button is pressed, the LED on the remote control blinks rapidly.



NOTE: When the remote control operating distance becomes too short for your purposes, install a fresh battery as described in the Remote Control Battery section of this manual.

To use the remote control, point it at the front of the projector and press a key, or “bounce” the IR signal off the viewing screen.

CARE AND MAINTENANCE

Storage and Transportation

To prepare your P200/P250 for transport, perform the following steps:

1. Press *POWER* to turn off the projector and lamp. (The fans will continue turning for approximately three minutes.)
2. When the fans have stopped turning and the P200/P250 is cool, unplug the power cord.
3. Close the P200/P250 down to its storage position and engage the locking mechanism.
4. Rotate and close the mirror into its storage position.



NOTE: Store and transport the Firefly™ P200/P250 at temperatures between 0° and 140°F (-17° to 60°C). Avoid storage in automobiles during seasonal temperature extremes. Automobile interior temperatures can exceed 160°F (70°C) in summer and drop below -20°F (-29°C) in winter. If the Firefly™ P200/P250 has been exposed to extremely hot, cold or humid conditions, allow it to stand at room temperature for 30 minutes before use. Take care to protect the Firefly™ P200/P250 from jarring impacts.

Lens Cleaning

1. Lift and rotate the mirror as shown in Figure 6.
2. Gently wipe the exposed lens surfaces with a clean, lint-free tissue (slightly moistened with lens cleaner if necessary). **Never** pour lens cleaner or other solvents on the lens elements.



CAUTION! Never use silicone-impregnated eyeglass tissues on the coated projection lens.

Lamp Replacement

1. Press *POWER* to turn off the projector and lamp. (The fans will continue turning for approximately three minutes.)



WARNING! To prevent burns, allow the lamp access door and projector lamp to cool before attempting to replace the lamp.

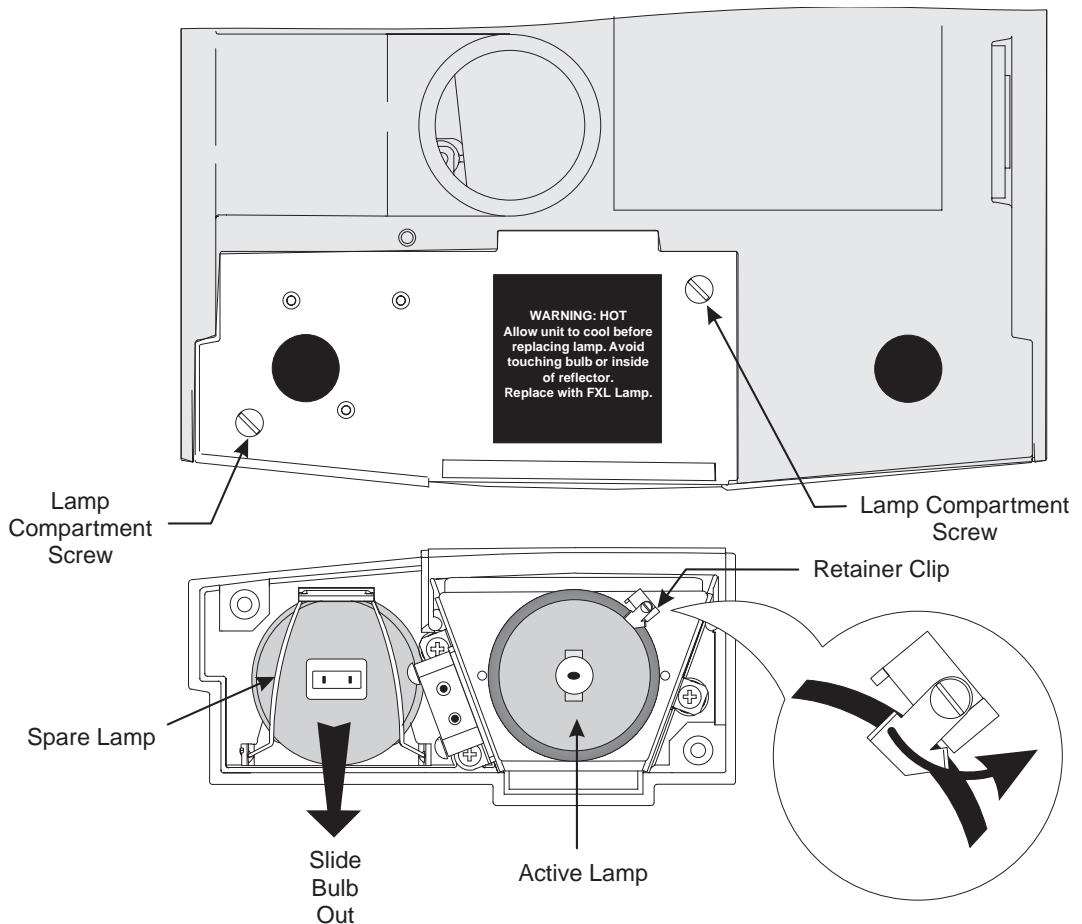
2. When the fans have stopped turning and the P200/P250 is cool, unplug the power cord.

3. Rotate and lower the mirror, then close the P200/P250 down to its storage position.
4. Turn the P200/P250 over on a flat, stable surface.



NOTE: Typically, lamps have an average operating life of approximately 30 hours. When lit, **REPLACE LAMP** indicates that the P200/P250 has reached this average lamp operating life, and lamp failure may occur soon. You may elect to replace the lamp or reset the **LAMP HOURS** using the Menu Mode On-Screen control, or you may elect to continue using your P200/P250 until the lamp actually fails.

Figure 12. Lamp Replacement



5. Loosen the two lamp compartment screws shown in Figure 12. (These are captive screws and should **not** be completely removed.)

6. Lift out the lamp/spare lamp compartment assembly.
7. Turn over the lamp compartment assembly and place it on a stable surface.
8. Rotate the retainer clip (Figure 12) and pull the active lamp out of the lamp holder.
9. Slide the spare lamp from its storage location.
10. Insert the spare into the lamp holder and rotate the retainer clip to its original position.



NOTE: Replace the spare lamp as soon as possible.

11. Replace the lamp/spare lamp compartment assembly.
12. Tighten the two lamp compartment screws shown in Figure 12.

Fuse Replacement

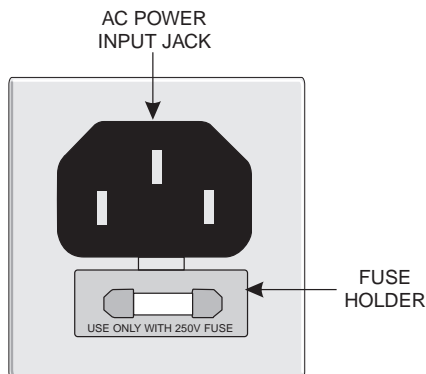
Figure 13 shows the location of the fuse holder. Use a small flat-blade screwdriver to pop the fuse holder out.



NOTE: To access the fuseholder, the Firefly™ P200/P250 must be in its raised position with the power cord unplugged.

Replace the fuses only with the type and rating shown on the label. If the module repeatedly blows fuses, return it for servicing.

Figure 13. Fuseholder Location



Troubleshooting Guide

PROBLEM

POSSIBLE SOLUTIONS

Telex logo is displayed on Firefly™ P200/P250

- Unit is working properly, but no video source is present.

No image projected from Firefly™ P200/P250

- Firefly™ not turned on.
- Firefly™ not connected to AC wall outlet.
- AC wall outlet defective.
- Computer or video cable not secure.
- No video signal from computer or video source.
- Incompatible video signal from computer.
- Projector lamp burned out.
- Weak video signal or poor VCR tracking.

No image on computer monitor

- Computer or monitor video cable not secure.
- Monitor power off or disconnected.
- Firefly™ not connected to AC wall outlet.
- No video signal from computer.

Poor color or no color

- Adjust brightness, tint, and contrast controls.
- Wrong inverse mode; change **INVERSE** setting.
- Signal from computer is monochrome.
- Computer video cable not secure.
- Select a different color mode using the **PALETTE** function.
- Adjust room lighting.

Flickering or unstable image

- Focus needed; use the **FOCUS** control (there are eight possible settings).
- Computer video cable not secure.
- Incompatible video signal from computer.
- Adjust the **WIDTH** control.

PROBLEM	POSSIBLE SOLUTIONS
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Split image or partial image	
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- Image alignment needed; use up-down and left-right arrow keys.
- Incompatible video signal from computer.
- Reset the Firefly™ to factory default settings.

Power button not illuminated on keypanel	
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- Firefly™ not connected to AC wall outlet.
- Defective AC wall outlet.

No audio from built-in speakers	
---------------------------------	--

- No audio source connected.
- Firefly™ not turned on.
- Firefly™ not connected to AC wall outlet.
- AC wall outlet defective.
- Audio source turned off.
- Audio source not connected with appropriate video input.
- Audio source and audio output cables are reversed.
- Volume control is set too low.
- External amplified speaker system connected to the *AUDIO OUT* jack.

Visible bright spots	
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- An inactive pixel may appear as a bright spot on the screen, however, it will not affect picture quality or the life expectancy of the P200/P250. (The Firefly™ P200/P250 may contain a maximum of 50 inactive pixels.)

Image contains one or more vertical bars	
--	--

- Use the Menu Mode On-Screen Controls to adjust the **WIDTH**. (After eliminating the vertical bars, use **FOCUS** to sharpen the image.)



NOTE: When adjusting the **WIDTH**, if the left arrow adjustment causes the number of bars to increase, use the right arrow adjustment to eliminate the bars. If the right arrow adjustment causes the number of bars to increase, use the left arrow adjustment to eliminate the bars.

PROBLEM

POSSIBLE SOLUTIONS

Image out of focus

- Rotate the lens to adjust screen focus.
- Adjust **FOCUS** control.



NOTE: If only portions of the image are out of focus and the **FOCUS** adjustment causes the out-of-focus portions to move, refer to the solution described in the “vertical bars” problem.



NOTE: Displaying a cross-hatch pattern will aid in resolving any focus adjustment problems.

No image on Macintosh monitor

- Incorrect Macintosh computer and monitor adapters.
(Use the 55093-002 and 550093-003 adapters with the 15-inch Macintosh multisync monitor or with the 12-inch Macintosh monitor. Use the 55093-000 and 550093-001 with non-multisync Macintosh monitors. Use the 55093-003 and 550093-004 with 832 x 624 Macintosh monitors)

No screen image with Macintosh PowerBook

- PowerBook must be turned on after the P200/P250 is connected.
(Turn off the PowerBook, then turn it on again.)
- Ensure that Monitor Mirroring is enable on the PowerBook control screen.

Undefined or unresolved problem

- Before calling for technical assistance use the RESET control to restore the factory default settings, then use the Keypanel and Menu Mode On-Screen Controls to make your image enhancements.

SERVICE INFORMATION

In the interest of promptness (if service is required), it is recommended that you first contact the dealer from whom the equipment was purchased. If modules are to be returned to the dealer or factory, they should be shipped in the original packing material or carefully packed in some other container with sufficient packing material to prevent damage. Technical assistance is available from the Telex Customer Service Department at the following address:

Customer Service Department
Telex Communications, Inc
9600 Aldrich Avenue South
Minneapolis, Minnesota 55420 USA
Telephone: (612) 884-4051
(Collect calls not accepted)

Return equipment for factory repair to:

Service Department
Telex Communications, Inc.
1720 East 14th Street
Glencoe, MN 55336 USA



NOTE: All equipment returned for repair must be accompanied by documentation stating your return address, telephone number and proof of date of purchase, along with a description of the problem. In lieu of this, you may obtain a Return Authorization Form from our Customer Service Department.

TECHNICAL SPECIFICATIONS

P200 Computer Compatibility

- IBM and IBM compatibles with VGA (640 x 480)
- Macintosh computers with external video (640 x 480 mode)
- 800 x 600 mode supported by showing a 640 x 480 window of the larger image

P250 Computer Compatibility

- IBM and IBM compatibles with SVGA (800 x 600)
- Macintosh computers with external video (832 x 624 and 800 x 600 modes)
- 640 x 480 mode supported by showing a window with the smaller image

Computer Interface

HD-15 D-subminiature interface connector

Color Palette

- 8-color mode: 2 shades per color, 8 total colors
- 16M-color mode: 253 shades per color, 16,194,277 total colors

LCD Panel

- 6.4" (diagonal measure)
- Active matrix TFT
- Contrast ratio
 - 60:1 minimum
 - 100:1 typical
- 640 x 480 pixel resolution (P200)
- 800 x 600 pixel resolution (P250)
- Pixel response time for the P200
 - t_r = 30 msec typical
 - t_f = 50 msec typical
- Pixel response time for the P250
 - t_r = 10 msec typical
 - t_f = 40 msec typical

Optical Lens

- 140 mm focal length
- f3.7
- Four element Dogmar lens

Computer Video Requirements

- Red, Green, Blue signal input/output
(0 to 1.0V at 75 ohms impedance)
- Vertical sync frequency: 50 - 72 Hz
- Horizontal sync frequency: 31 - 40 kHz (P200)
- Horizontal sync frequency: 31 - 48 kHz (P250)

Composite Video Requirements

NTSC, PAL or SECAM composite video

S-VHS Video Requirements

NTSC, PAL or SECAM video with
separate chrominance and luminance

Projection Lamp Requirements

410 Watt FXL lamp

Input Power

- 465 Watts
- 120 VAC, 60 Hz; 230 VAC, 50/60 Hz; auto-sensing

Weight

9.8 lbs (4.4 kg)

Dimensions

2.9" (H) x 16" (L) x 10.3" (W)
(74 mm x 406 mm x 262 mm)

Environmental Requirements

- Storage temperature: 0° to 140°F (-17° to 60°C)
- Operating temperature: 32° to 95°F (0° to 35°C)
- Relative humidity: 95% (non-condensing) at 95°F (35°C)

ABBREVIATIONS

AUX	Auxiliary
B/W	Black and white
CCIR	Comite Consultatif International des Radio Communications
CD	Compact disk
CW	Clockwise
CCW	Counter-clockwise
DOS	Disk operating system
EP	Extended play (same as SLP)
FCC	Federal Communications Commission
LCD	Liquid crystal display
LED	Light emitting diode
LP	Long play
ME-SECAM	Middle East SECAM
NTSC	National Television System Committee
PAL	Phase alternation by line
RAM	Random access memory
ROM	Read only memory
SECAM	Sequentiel Couleur A Memoire
SLP	Super long play (same as EP)
SP	Standard play
SVGA	Super VGA
S-VHS	Super VHS
TFT	Thin film transistor
VAC	Volts-alternating current
VCR	Video cassette recorder
VDC	Volts-direct current
VGA	Video graphics adapter
VHS	Video home system

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